

**ABSTRACT****STRUCTURAL HEALTH MONITORING**

The present invention relates to testing structures or bodies to determine if they contain defects. The defects may be, for example, cracks, delamination etc. Conventional non-destructive testing exploits the non-linearities of such defects. The non-linearities produce intermodulation products in the form of side-bands of an excitation signal. The amplitudes of the side-bands are used to provide an indication of the structural health of the body. However, it has been found that such methods of testing bodies suffer from the vagaries of the environment, temperature and transducer manufacturing tolerances etc. This can lead to inaccurate test results. Suitably, the present invention provides a method for testing a body; the method comprising the steps of comparing first data, representing an excitation signal launched into the body to produce a guided wave within the body, with second data, derived from the body while bearing the guided wave, to identify a phase difference between the first and second data; and determining a measure of the structural integrity of the body using the phase difference. By basing the assessment of the structural body on defect induced phase modulation, more accurate testing can be performed that is independent of at least some of the above-mentioned vagaries.

(figure 1)